

HIGH PERFORMANCE ELASTOMER-CONTAINING CONCRETE MATERIAL

ABSTRACT

A concrete material that includes an elastomeric polymer in an amount sufficient to provide flexibility to the resultant material; a silicone resin in an amount sufficient to improve adhesion between the elastomeric polymer and the cement; a cement that has low shrinkage and expansion properties; a filler; and water in an amount sufficient to cure the cement and form the concrete material. The polymer is present in an amount which fills at least some of the pores in the material and the silicone resin helps the polymer bond the filler to the cement. Also, a concrete material property improving additive in the form of a polymer admixture that includes the elastomeric polymer, a silicone resin and at least one solvent in an amount sufficient to form a viscous flowable mass. Another embodiment is a method of forming a concrete material by forming and curing a mixture of the additive, a cement that has low shrinkage and expansion properties, a filler, and water in an amount sufficient to cure the cement. Another embodiment is a method of repairing a crack or fracture in a concrete or cement surface by cleaning surfaces of the crack or fracture to remove loose material and to create a cavity, applying the concrete material of the invention under pressure into the cavity, and allowing the concrete material to cure to repair the crack or fracture. The resultant repaired surface forms yet another embodiment of the invention.